PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 04 FB 27 E	**FOR FURTHER ACTION**	See Form PCT/IPEA/416
International application No. PCT/IT2004/000048	International filing date *(day/month/year)* 09.02.2004	Priority date *(day/month/year)* 09.02.2004
International Patent Classification (IPC) or national classification and IPC INV. A61M1/02		
Applicant ANGELANTONI INDUSTRIE SPA et Al.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *sent to the applicant and to the International Bureau)* a total of 5 sheets, as follows:
      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
06.12.2005	07.06.2006
Name and mailing address of the international preliminary examining authority: European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized officer Villeneuve, J-M Telephone No. +31 70 340-2893

Box No. I Basis of the report

1. With regard to the **language**, this report is based on

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
   - ☐ international search (under Rules 12.3(a) and 23.1(b))
   - ☐ publication of the international application (under Rule 12.4(a))
   - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

2-9	as originally filed
1, 1a	received on 12.12.2005 with letter of 06.12.2005

Claims, Numbers

1-11	received on 12.12.2005 with letter of 06.12.2005

Drawings, Sheets

1/2, 2/2	as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

* *If item 4 applies, some or all of these sheets may be marked "superseded."*

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-11
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-11
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-11
	No:	Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1 Reference is made to the following documents:

D1: DE 44 18 005 A (SCHEUER UWE) 23 November 1995 (1995-11-23)
D2: US-A-5 661 978 (BROADFIELD LP ET AL) 2 September 1997 (1997-09-02)

2.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1 and shows (the references in parentheses applying to this document):

- an apparatus for receiving, preserving and supplying bags of blood, comprising:
- a cabinet (10) for containing all the components of the apparatus,
- a refrigerated space for containing the bags,
- a magazine (2) comprising a plurality of cells (1), each capable of containing a single bag, the magazine (2) being housed inside the refrigerated space, each of the cells (1) being identified by a cell code, and wherein the cells (1) are structured in superposed levels, the cell code is univocal, the cell code is independent of the level in which the cell(31)is located and of the position of the cell (1) in the level and wherein cell identification means (not shown) capable of retrieving and/or containing cell codes, preferably bar codes, are placed at the cells(1)
- at least one door (14) for allowing access by an operator to the cells (1), a movement system(4, 5, 6, 8, 9) housed inside the cabinet (10) and capable of moving, preferably rotating, the cells (1), a cooling system (25-29) housed inside the cabinet and capable of cooling the refrigerated space, a processing system (computer, not shown) housed inside the cabinet, capable of controlling the movement system and the cooling system
- a reading device (7) for reading bag identification means, said device being connected to the processing system, housed inside the cabinet and placed at walls of the cabinet.

2.2 The subject-matter of claim 1 differs from this known device in that it further comprises:

- at least one reading device(132) for reading cell identification means (32) and

connected to the processing system(7), and at least one corresponding movement member (131) for said reading device (132) controlled by the processing system (7), said device and said member being housed inside the refrigerated space(21), said apparatus comprising a machine space(22)
separated from the refrigerated space (21), said machine space (22) further comprising the movement system (5), the cooling system (6) and the processing system(7)

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

2.3 The problem to be solved by the present invention may be regarded as providing a secure identification and retrieval system for the dispensing of the blood bags.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

The available prior art does not teach nor suggests the separate identification means for the cells and the bags. This disposition allows to associate the cell and the bag at loading time for further retrieval, irrespective of the mounting position of the cell in the apparatus.
The movement mechanism on which the cell code reading device is mounted has the further advantage of only necessitating one reader.

2.4 Claims 2-11 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Title

Apparatus for receiving, storing and providing bags of blood

DESCRIPTION

The present invention refers to an automated and computerised apparatus for receiving, preserving and supplying bags of blood.

Around 1996, the company Angelatoni developed an apparatus of this type; this consisted substantially of a refrigerator inside which there was a rotating magazine equipped with cells for containing the bags of blood; the refrigerator was controlled by a Personal Computer by way of a series of electrical connections; an electrical connection was provided for each sensor and an electrical connection for each actuator; all the electrical connections were grouped in two large multi-wire cables. The product was commercially very successful.

The approach followed in the designing of that apparatus is the conventional one which is used when a computerised machine-tool is designed: that is to say, the mechanics are separated from the electronics and the sensors and actuators are placed at the interface. Such an approach is very sensible; in fact, the mechanics and the electronics have little in common; in general there is no advantage in placing them close to one another (on the contrary, it may be difficult), and it is quite often necessary to keep them distant from each other.

The control program was loaded onto the PC connected to the apparatus; the PC was of conventional type and therefore it was very easy to load other software of commercial type.

A freezing unit, for the long time preserving of blood products (for example, plasma) is disclosed in the German patent application No. 4418005 to Scheuer Uwe, wherein the fresh blood drawn from a donor is stocked, frozen and waits for a classification.

Recently, Angelantoni decided to place on the market a new version of that machine and therefore carried out some research activity in order to improve it.

As a result of this activity, it was realised that such an apparatus for bags of blood is very different from a computerised machine tool.

Firstly, its principal activity (that is to say, preserving the bags of blood at the

correct temperature) is carried out in the absence of an operator.

This activity is very important and therefore safety and reliability of the apparatus are key factors.

The apparatus is typically placed in locations with free access.

Claims

1. An apparatus for receiving, preserving and supplying bags of blood, comprising:

. a cabinet(2)for containing all the components of the apparatus,

. a refrigerated space (21)for containing the bags,

. a magazine (3) comprising a plurality of cells (31), each capable of containing a single bag, the magazine (3) being housed inside the refrigerated space (21), each of the cells (31) being identified by a cell code, and wherein the cells (31) are structured in superposed levels, the cell code is univocal, the cell code is independent of the level in which the cell(31)is located and of the position of the cell (31) in the level and wherein cell identification means (32) capable of retrieving and/or containing cell codes, preferably bar codes, are placed at the cells(31).

. at least one door (4) for allowing access by an operator to the cells (31),

. a movement system(5) housed inside the cabinet(2)and capable of moving, preferably rotating, the cells (31),

. a cooling system(6)housed inside the cabinet(2)and capable of cooling the refrigerated space(21),

. a processing system (7)housed inside the cabinet(2), capable of controlling the movement system (5) and the cooling system (6)

. a reading device (10) for reading bag identification means, said device being connected to the processing system(7), housed inside the

cabinet(2) and placed at walls (23) of the cabinet(2),

characterized in that it further comprise

- at least one reading device(132) for reading cell identification means (32) and connected to the processing system(7),and at least one corresponding movement member (131) for said reading device (132) controlled by the processing system (7), said device and said member being housed inside the refrigerated space(21),
- said apparatus comprising a machine space(22) separated from the refrigerated space (21), said machine space (22) further comprising the movement system (5), the cooling system (6) and the processing system(7).

2. An apparatus according to claim 1 wherein the processing system(7) is capable of controlling the receiving, preservation and supply of the bags and is connected to a keyboard (8) and a screen (9),both placed at the walls (23)of the cabinet (2).
3. An apparatus according to one of the preceding claims, comprising a metal container capable of completely containing the processing system(7).
4. An apparatus according to one of the preceding claims, comprising a network port (11) of the wire-free type for connecting the processing system (7) to a computer network.
5. An apparatus according to one of the preceding claims, comprising a modem (12) of the wire-free type for connecting the processing system (7) to a telephone network.

6. An apparatus according to one of claims 1 to 5, comprising only one door (4) which extends from the first to the last level of the magazine(3), wherein one cell (31) of each level is notional and wherein the movement system (5) is capable of rotating a single level at a time.

7. An apparatus according to one of the preceding claims, wherein the processing system (7) comprises a sub-system for thermal control of the refrigerated space(21), said sub-system being independent of, but in communication with, the processing system(7).

8. An apparatus according to claim 7, wherein the thermal control sub-system is equipped with an emergency power source.

9. An apparatus according to one of the preceding claims, wherein the processing system (7) comprises a control program equipped with a communication module capable of communicating with a management program typically by way of a network port.

10. An apparatus according to claim 9, wherein the communication module is a software element independent of the control program and is capable of being actuated by the control program during the execution of the control program.

11. An apparatus according to claim 10, wherein the control program is equipped with a software interface that is fixed and predetermined for interacting with the communication module.